

Information Request DTE 2-33

Request:

Please refer to DTE 1-1(o), Exhibit AJM-4, and answers to DTE 2-28 and DTE 2-29, above. When added to daytime or nighttime ambient noise levels (i.e., 30 to 34 dBA, as reported in Exhibit AJM-4), would eight transformers produce a "pure tone"?

Response:

The Company's interpretation of 'pure tone' is the situation where one octave band center frequency exceeds others by more than 3 dBA. Based on that information the Company consulted with ABB (See DTE 2-33 Attachment A) and concluded that:

- 1) For the case of a single transformer a 'pure tone' will be perceived by an observer located at the substation. Information provided by ABB indicates that at different load levels the noise spectra varies producing an octave band that exceeds the rest by more than 3 dBA.
- 2) For the theoretical case of four completely 'identical' transformers the same holds true, one octave band will exceed the rest by more than 3 dBA. The total noise for each octave band will increase by 6 dBA (as a result of noise addition) but the difference between bands would remain the same. Therefore an observer located at the substation will perceive a 'pure tone'. However, based on practical experience, the noise spectra of four transformers built to the same design will not be identical. Four transformers are expected to have less tendency to develop a 'pure tone' than a single transformer.
- 3) Based on (2) it is the Company's expectation that the combination of eight transformers with different noise spectra will not produce a 'pure tone' that can be perceived by an observer